

REMARKS

This amendment, submitted in response to the Office Action dated December 27, 2002, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

Claims 2-16 remain pending in the application. Claims 2-7 and 15-16 have been allowed. Claim 10 has been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 8 has been rejected under 35 U.S.C. § 102(e) as being anticipated by Hirata (U.S.P. 6,195,375). Claims 9 and 11-14 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Naito et al. (U.S.P. 5,386,429, hereafter "Naito"). Claim 10 has been amended as set forth above. Applicant would submit that the amendments do not raise any new subject matter that were not previously before the Examiner and should be deemed allowable for the reasons set forth at page 4, lines 9-10 of the Office Action. Applicant submits the following arguments in traversal of the prior art rejections.

Applicant would note that the multi-mode of Hirata refers to a multiple longitudinal mode. On the other hand, in the present invention, the fundamental mode relates to a fundamental transverse mode, which can be said to be a single fundamental transverse mode to the substantial exclusion of any other modes. The multi-mode oscillation, in the longitudinal mode, in Hirata differs in direction and degree from the fundamental transverse mode as described in amended claim 8.

Applicant submits the following arguments in traversal of the prior art rejections of non-amended claims 9 and 11-14.

Applicant's invention relates to a semiconductor laser that is operable in a fundamental mode even at high output power. Detailed descriptions of the background and exemplary embodiment of the invention are set forth in the August 12, 2002 Amendment at page 8. Applicant refers the Examiner to these descriptions. Further to these descriptions, Applicant would emphasize that the laser device of claim 9 includes a lower optical waveguide layer, a quantum well layer formed above the lower optical waveguide layer, and an upper optical waveguide layer formed above the quantum well layer, and a current confinement layer formed in direct contact with the upper optical waveguide layer.

Naito relates to a semiconductor laser having a substrate 1, buffer layer 2, clad layer 3, active layer 4, first light guide layer 5, second light guide layer 6 and current blocking layer 7 arranged in this order. See Fig. 1, col. 3, lines 17-32. The reference further describes the active layer and light guide layers including an Al composition. Col. 9, lines 10-15. To the extent that an aluminum free material is discussed by Naito, this discussion is only in reference to a second, upper light guide layer. Col. 13, lines 8-10.

The Examiner contends that Naito teaches each feature of independent claim 9. However, the claim describes a quantum well layer formed above a lower optical waveguide layer, and an upper waveguide layer disposed above the quantum well layer. To the extent Naito teaches two waveguide layers, both such layers are disposed above the quantum well layer, rather than one on each side of the well layer as claimed. Contrary to the Examiner's contention, claim 9 is not anticipated by Naito. Claims 10-14 are patentable based on their dependency.

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With further regard to claims 11-12, these claims describe lower and upper waveguide layers and a quantum well layer formed from aluminum-free materials. While the Examiner contends that col. 13 of Naito teaches this feature, it is noted that col. 13 only discusses an aluminum-free material for the second optical layer. The remaining waveguide layer and active layer can still comprise aluminum even with the InGaP materials used for one optical layer. Therefore, claims 11-12 are patentable for this additional reason.

Additionally, with regard to the Examiner's Statement for Allowance, the Examiner's reasons include a description of an upper cladding layer. Applicant would submit that the allowable independent claim 2 does not include such a recitation, but that the claims are nonetheless allowable for their respective recitations.

In view of the above, Applicant submits that claims 2-16 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

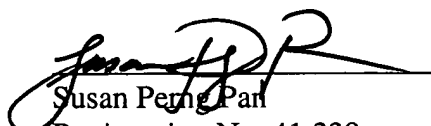
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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

8 (Amended). A semiconductor laser device having an index-guided structure and oscillating in a fundamental transverse mode, comprising:

a lower cladding layer;

a lower optical waveguide layer formed above said lower cladding layer;

a quantum well layer formed above said lower optical waveguide layer;

an upper optical waveguide layer formed above said quantum well layer; and

a current confinement structure formed above said upper optical waveguide layer;

said upper optical waveguide layer has a first thickness smaller than a second thickness of said lower optical waveguide layer;

wherein said index-guided structure has a stripe width of 4 micrometers or smaller.

10 (Amended). A semiconductor laser device according to claim 9, wherein said upper optical waveguide layer has a first thickness, and said lower optical waveguide layer has a second thickness, and a sum of said first and second thickness is 0.5 micrometers or greater.